APPENDIX A
History of the Miami Harbor Federal Project

MIAMI HARBOR, FLORIDA
Condition of Improvement, 30 September 1996

ACTS, WORK AUTHORIZED, and DOCUMENTS:

MIAMI RIVER
3 Jul 1930 Channel 15 feet deep by 90-150 feet wide Specified in Act.

MIAMI HARBOR
13 June 1902 Channel (Government Cut) 18 feet deep across peninsula and north jetty H. Doc.662/56/1 & A.R. for 1900 p.1987

2 March 1907 South Jetty and channel 100 feet wide. Specified in Act.

25 July 1912 Channel 20 feet deep by 300 feet wide and extension of Jetties H. Doc. 554/62/2

3 March 1925 Channel 25 feet deep at entrance and 25 feet deep by 200 feet across Biscayne Bay H. Doc. 516/67/4

3 July 1930 Channel 300 feet wide across Biscayne Bay and enlarging municipal turning basin. R. & H. Comm. Doc. 15/71/2

30 August 1935 Depth of 30 feet to and in turning basin. S. Comm. Print 73.2

26 August 1937 Widen turning basin 200 feet on south side. R. & H. C. Doc. 86/74/2

2 March 1945 Virginia Key improvement. (Deauthorized) S. Doc. 251/79/2

2 March 1945 Consolidation of Miami River and Miami Harbor projects; widening at mouth of Miami River (Deauthorized); a channel from the mouth of the river to the Intracoastal Waterway (Deauthorized); thence a channel from the Intracoastal Waterway to Government Cut(Deauthorized); and a channel from Miami River to harbor of refuse in Palmer Lake (Deauthorized). H. Doc. 91/79/1

14 July 1960 Channel 400 feet wide across Biscayne Bay; enlarge turning basin 300 feet on south and northeasterly sides; dredge turning basin on north side Fisher Island; deauthorize Virginia Key development. S. Doc. 71/85/2

13 August 1968 Enlarging the existing entrance channel to 38-foot depth and 500-foot width from the ocean to the existing beach line; deepening the existing 400-foot wide channel across Biscayne Bay to 36 feet; and deepening the existing turning basin at Biscayne Boulevard terminal and Fisher Island to 36 feet. S. Doc. 93/90/2

17 November 1986 Deauthorized the widening at the mouth of Miami River to existing project widths; and the channels from the mouth of Miami River to the turning basin, to Government Cut, and to a harbor of refuge in Palmer Lake. Public Law 99-662

28 November 1990 Deepening the existing Outer Bar Cut, Bar Cut, and Govt Cut to a depth of 44 ft.; Enlarging Fishermans Channel, south of Lummus Island, to a depth of 42 ft. and a width of 400 ft.; and Constructing a 1600 ft. diameter Turning Basin near the west end of Lummus Island to a depth of 42 ft. Public Law101-640
11/28/90

PROJECT: A channel 38 feet deep by 500 feet wide from the ocean to the existing beach line, thence 36 feet deep by 400 feet wide through the entrance and across Biscayne Bay and including a turning basin 16,500 feet wide and 1,700 feet long at the seaport terminals; two jetties at entrance; a turning basin along the north side of Fisher Island, about 39 acres in extent and 36 feet deep; a channel in Miami River 15 feet deep under flood conditions, 150 feet wide for 3 miles thence 125 feet wide for 1.1 miles, and thence 90 feet wide for 1.4 miles. Length of project is about 11.5 miles including 6.0 miles of channel from ocean to seaport terminals; and 5.5 miles in river, from its mouth westerly.

LOCAL COOPERATION: 204(e) Agreement between the U.S. Army Corps of Engineers and Port of Miami, Nov. 1991.

PROGRESS: Phase I of the project authorized by the 1990 Act is complete. Phase II was awarded for construction in September 1994 and is scheduled for completion in June 1998.

COST:

SPONSOR: Port of Miami
1015 North American Way
Miami, Florida 33132

Source:	http://www.saj.usace.army.mil/digitalproject/dpn/sajn_021.htm
Accessed:	8 May 2002
Date	
Page Created:	04/23/98
Date	
Page Last Updated:	10/17/01
Point of Contact:	Barry.D.Vorse@saj02.usace.army.mil

APPENDIX B
Habitat Equivalency Analyses

Table B-1: HEA effective acreage gained from recovery of low-relief hardgrounds

Assumptions: dredging leaves 10% service, w/ linear increase

Year	% service level	% service loss	effective ac lost	discount factor	discount eff ac lost
2003	10.00%	90.00%	0.60	0.97	0.58
2004	17.50%	82.50%	0.50	0.94	0.47
2005	25.00%	75.00%	0.45	0.91	0.41
2006	32.50%	67.50%	0.41	0.88	0.36
2007	40.00%	60.00%	0.36	0.85	0.30
2008	47.50%	52.50%	0.32	0.82	0.26
2009	55.00%	45.00%	0.27	0.79	0.21
2010	62.50%	37.50%	0.23	0.76	0.17
2011	70.00%	30.00%	0.18	0.73	0.13
2012	77.50%	22.50%	0.14	0.70	0.09
2013	85.00%	15.00%	0.09	0.67	0.06
2014	92.50%	7.50%	0.05	0.64	0.03
2015	100.00%	0.00%	0.00	0.61	0.00

total effective-acre years/ac: 3.07

Table B-2: HEA effective acreage gained from recovery of low-relief hardgrounds

Assumptions: 20% service immediate, w/ linear increase

Year	% service level	% service increase	discount factor	discount eff ac gain
2003	20.00%	0.00%	1.00	0.00
2004	26.67%	6.67%	0.97	0.06
2005	33.33%	13.33%	0.94	0.13
2006	40.00%	20.00%	0.91	0.18
2007	46.67%	26.67%	0.88	0.23
2008	53.33%	33.33%	0.85	0.28
2009	60.00%	40.00%	0.82	0.33
2010	66.67%	46.67%	0.79	0.37
2011	73.33%	53.33%	0.76	0.41
2012	80.00%	60.00%	0.73	0.44
2013	86.67%	66.67%	0.70	0.47
2014	93.33%	73.33%	0.67	0.49
2015	100.00%	80.00%	0.64	0.51

total effective-acre years/ac: 3.90

Table B-3: HEA acreage calculation for low-relief hardbottom compensation

impact area		0.6
present discounted interim losses		3.07
present discounted lifetime gains per acre of replacement project		3.9
R= # acres required for compensation		
3.07=3.9*R		
R=	3.07/3.9	
R=	0.787179	

effective mitigation to compensation ratio: 1.316667

Table B-4: HEA effective acreage lost from impacts to high-relief reefs

Assumptions: dredging leaves 10% service, w/ linear increase

Year	% service level	% service loss	effective ac lost	discount factor	discount eff ac lost
2003	10.00%	90.00%	2.70	0.97	2.62
2004	13.00%	87.00%	2.35	0.94	2.21
2005	16.00%	84.00%	2.27	0.91	2.06
2006	19.00%	81.00%	2.19	0.88	1.92
2007	22.00%	78.00%	2.11	0.85	1.78
2008	25.00%	75.00%	2.03	0.82	1.65
2009	28.00%	72.00%	1.94	0.79	1.53
2010	31.00%	69.00%	1.86	0.76	1.41
2011	34.00%	66.00%	1.78	0.73	1.29
2012	37.00%	63.00%	1.70	0.70	1.19
2013	40.00%	60.00%	1.62	0.67	1.08
2014	43.00%	57.00%	1.54	0.64	0.98
2015	46.00%	54.00%	1.46	0.61	0.88
2016	49.00%	51.00%	1.38	0.58	0.79
2017	52.00%	48.00%	1.30	0.55	0.71
2018	55.00%	45.00%	1.22	0.52	0.63
2019	58.00%	42.00%	1.13	0.49	0.55
2020	61.00%	39.00%	1.05	0.46	0.48
2021	64.00%	36.00%	0.97	0.43	0.41
2022	67.00%	33.00%	0.89	0.40	0.35
2023	70.00%	30.00%	0.81	0.37	0.30
2024	73.00%	27.00%	0.73	0.34	0.25
2025	76.00%	24.00%	0.65	0.31	0.20
2026	79.00%	21.00%	0.57	0.28	0.16
2027	82.00%	18.00%	0.49	0.25	0.12
2028	85.00%	15.00%	0.40	0.22	0.09
2029	88.00%	12.00%	0.32	0.19	0.06
2030	91.00%	9.00%	0.24	0.16	0.04
2031	94.00%	6.00%	0.16	0.13	0.02
2032	97.00%	3.00%	0.08	0.10	0.01
2033	100.00%	0.00%	0.00	0.07	0.00
			total effective-acre years/ac:		25.76

Table B-5: HEA effective acreage gained from recovery of high-relief reefs

Assumptions: 20% service immediate, w/ linear increase

Year	% service level	% service increase	discount factor	discount eff ac gain
2003	20.00%	0.00%	1.00	0.00
2004	22.67%	2.67%	0.97	0.03
2005	25.33%	5.33%	0.94	0.05
2006	28.00%	8.00%	0.91	0.07
2007	30.67%	10.67%	0.88	0.09
2008	33.33%	13.33%	0.85	0.11
2009	36.00%	16.00%	0.82	0.13
2010	38.67%	18.67%	0.79	0.15
2011	41.33%	21.33%	0.76	0.16
2012	44.00%	24.00%	0.73	0.18
2013	46.67%	26.67%	0.70	0.19
2014	49.33%	29.33%	0.67	0.20
2015	52.00%	32.00%	0.64	0.20
2016	54.67%	34.67%	0.61	0.21
2017	57.33%	37.33%	0.58	0.22
2018	60.00%	40.00%	0.55	0.22
2019	62.67%	42.67%	0.52	0.22
2020	65.33%	45.33%	0.49	0.22
2021	68.00%	48.00%	0.46	0.22
2022	70.67%	50.67%	0.43	0.22
2023	73.33%	53.33%	0.40	0.21
2024	76.00%	56.00%	0.37	0.21
2025	78.67%	58.67%	0.34	0.20
2026	81.33%	61.33%	0.31	0.19
2027	84.00%	64.00%	0.28	0.18
2028	86.67%	66.67%	0.25	0.17
2029	89.33%	69.33%	0.22	0.15
2030	92.00%	72.00%	0.19	0.14
2031	94.67%	74.67%	0.16	0.12
2032	97.33%	77.33%	0.13	0.10
2033	100.00%	80.00%	0.10	0.08

total effective-acre years/ac: 4.84

Table B-6: HEA acreage calculation for high-relief compensation

injured area	2.7
present discounted interim losses	25.76
present discounted lifetime gains per acre of replacement project	4.84

R= # acres required for compensation

25.76=4.84*R

R= 25.76/4.84

R= 5.322314

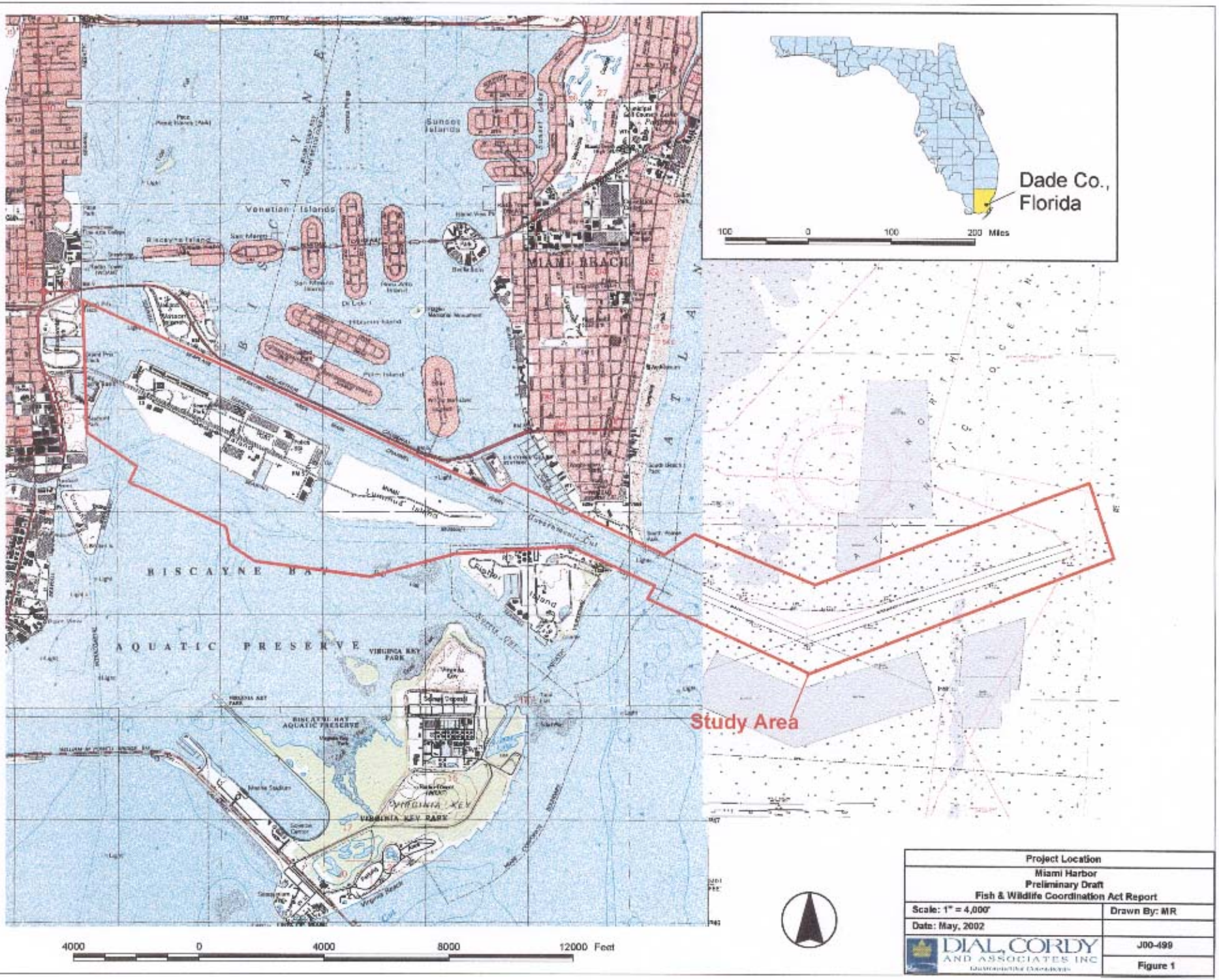
effective mitigation to compensation ratio: 1.971227

APPENDIX C
Calculation of Compensation for Temporal Loss of Habitat

Table C-1: MBRT acreage calculation for impacts to hardground compensation

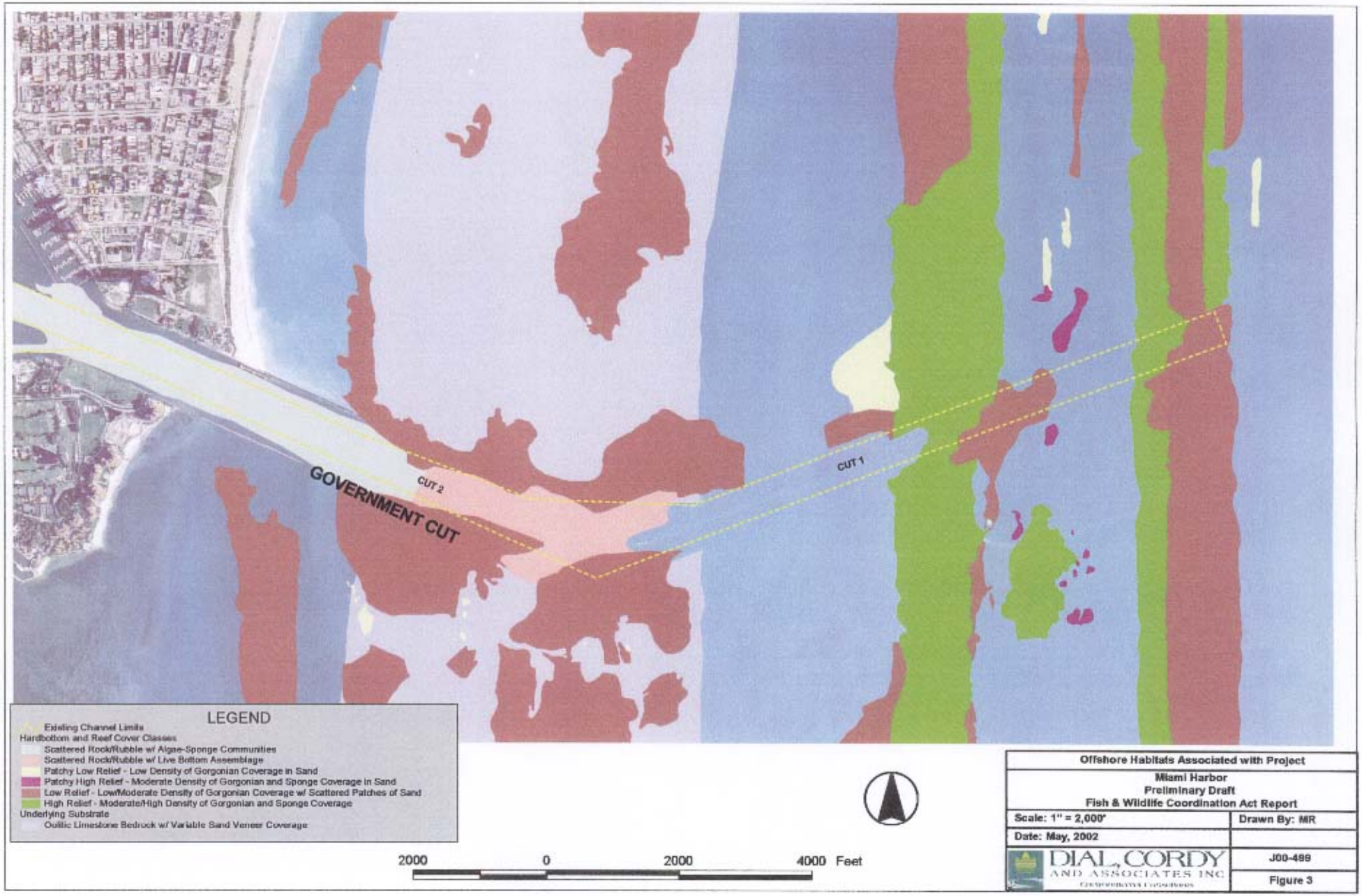
Δ TA = F	where:
Δ =	change in the capacity of an individual habitat function for a given polygon (0.90)
T =	temporal lag factor correction to account for temporal losses of habitat function (0.9507from table)
A =	area for impacts, or unknown mitigation area
F =	functional units
2.67	= A = impacts to habitats requiring 4 years for recovery, i.e., channel wall habitat (from GIS analyses)
0.9x2.67=	functional units in impact area
2.403	= F = functional units in impact area
0.9x.9507(A)=2.40	compensation equation
2.8 = A	area required for mitigation of temporal loss of habitat, previously impacted substrates (channel wall)

APPENDIX D: Figures

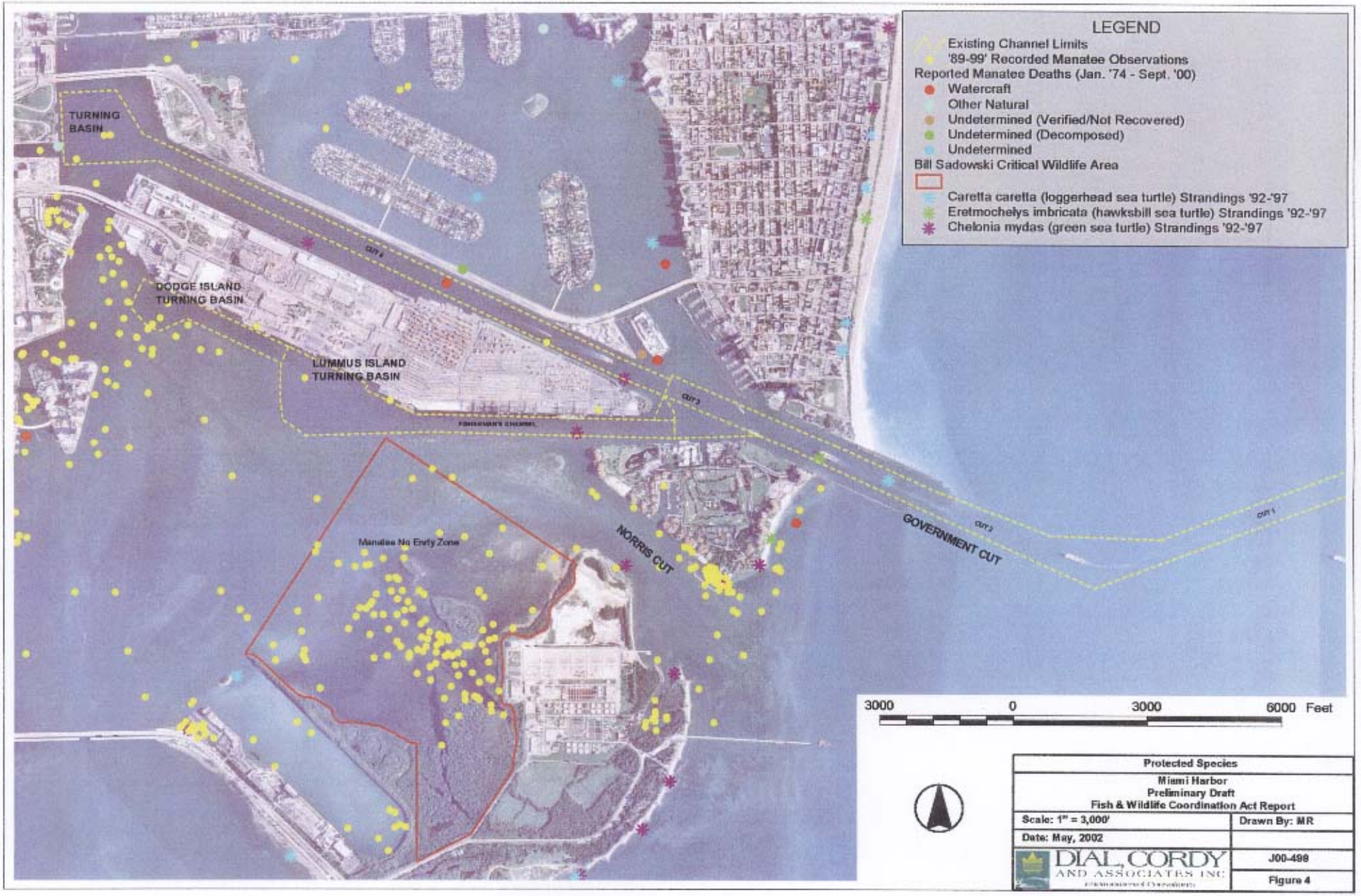


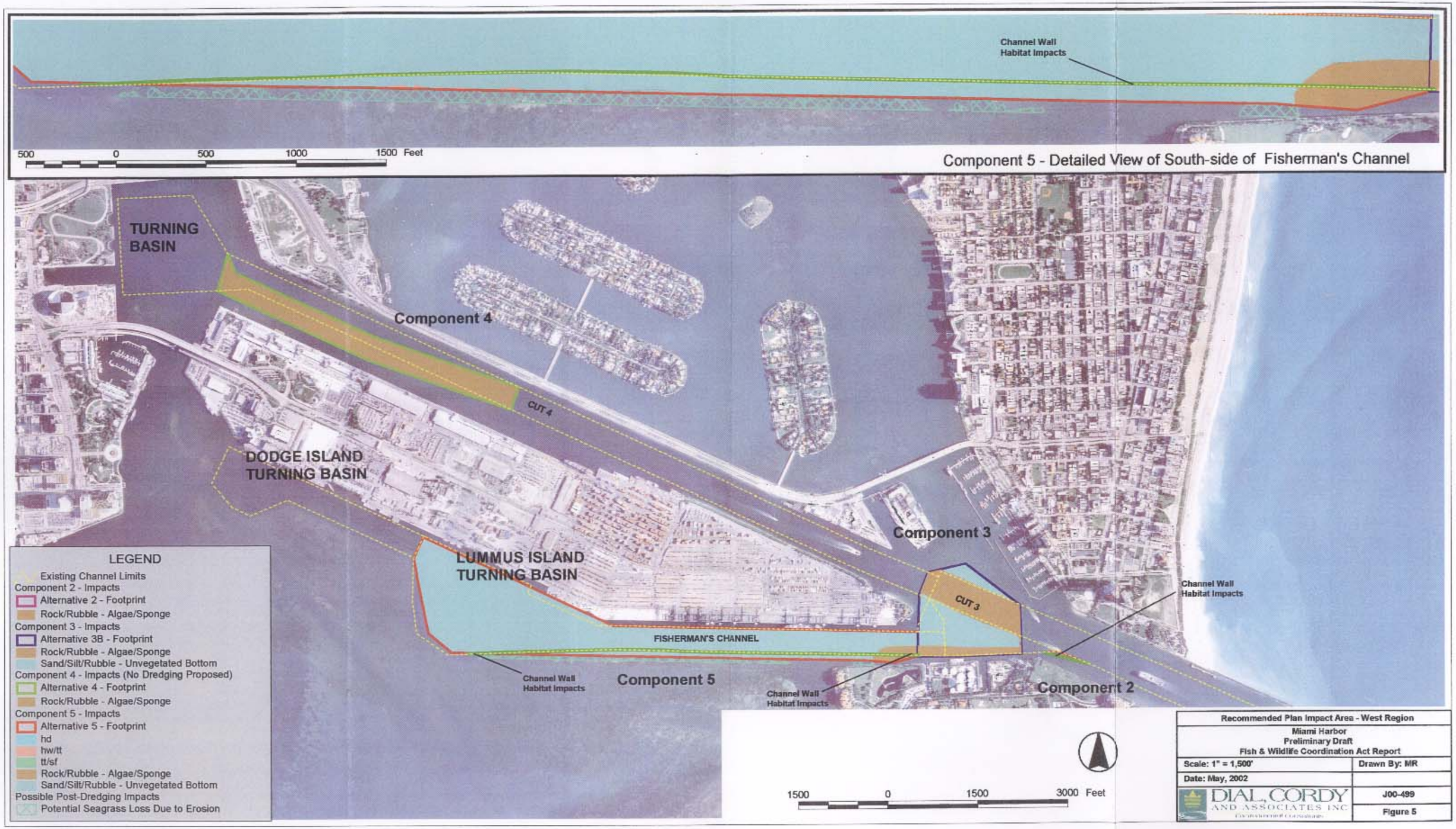
Project Location	
Miami Harbor Preliminary Draft Fish & Wildlife Coordination Act Report	
Scale: 1" = 4,000'	Drawn By: MR
Date: May, 2002	
DIAL, CORDY AND ASSOCIATES INC	J00-499
	Figure 1

Inshore Habitats Associated with Project	
Miami Harbor Preliminary Draft Fish & Wildlife Coordination Act Report	
Scale: 1" = 2,000'	Drawn By: MR
Date: May, 2002	
DIAL CORDY AND ASSOCIATES INC Environmental Consultants	J00-499
	Figure 2

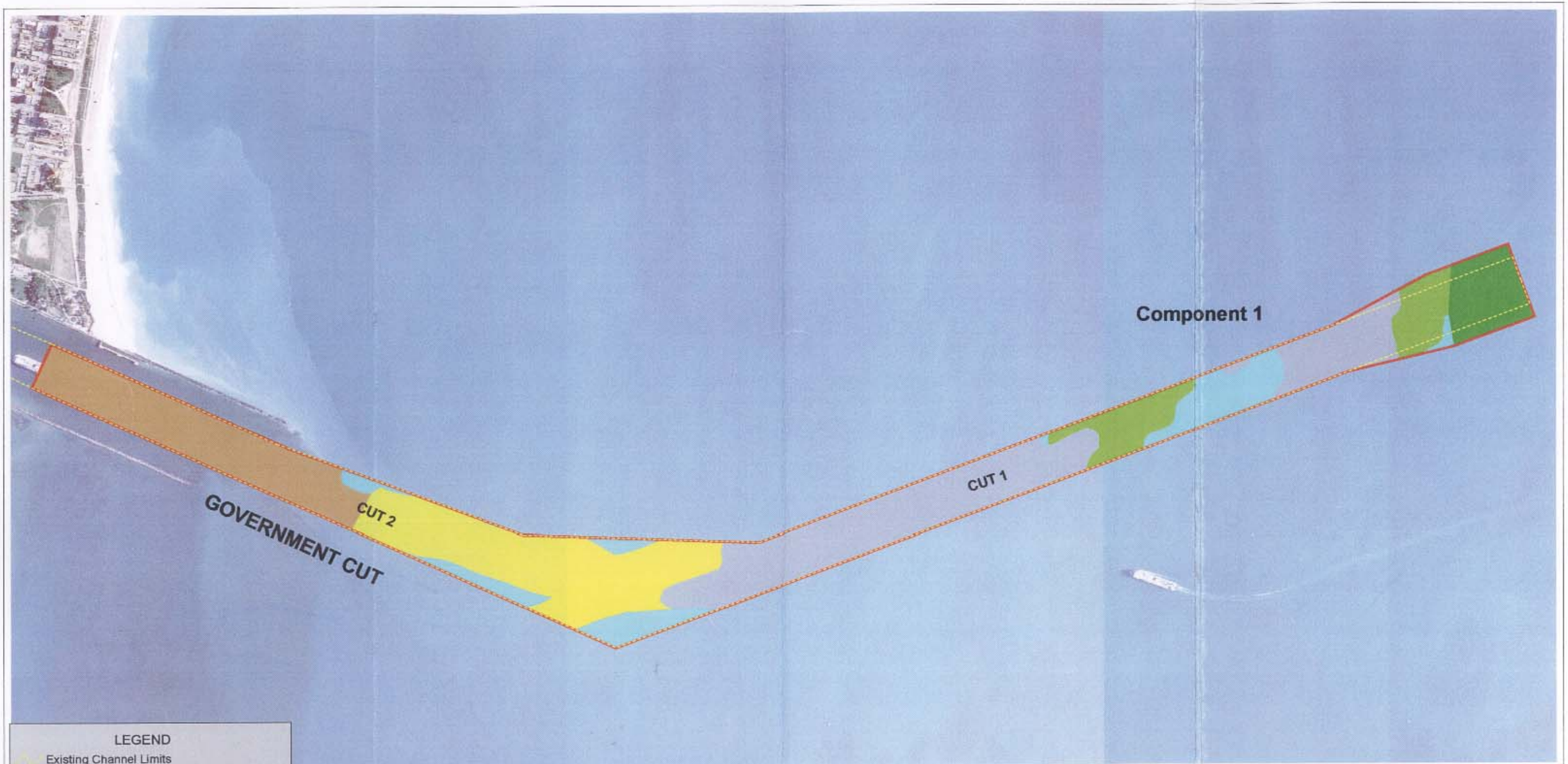


Offshore Habitats Associated with Project	
Miami Harbor Preliminary Draft Fish & Wildlife Coordination Act Report	
Scale: 1" = 2,000'	Drawn By: MR
Date: May, 2002	
DIAL, CORDY AND ASSOCIATES INC	J00-499
	Figure 3

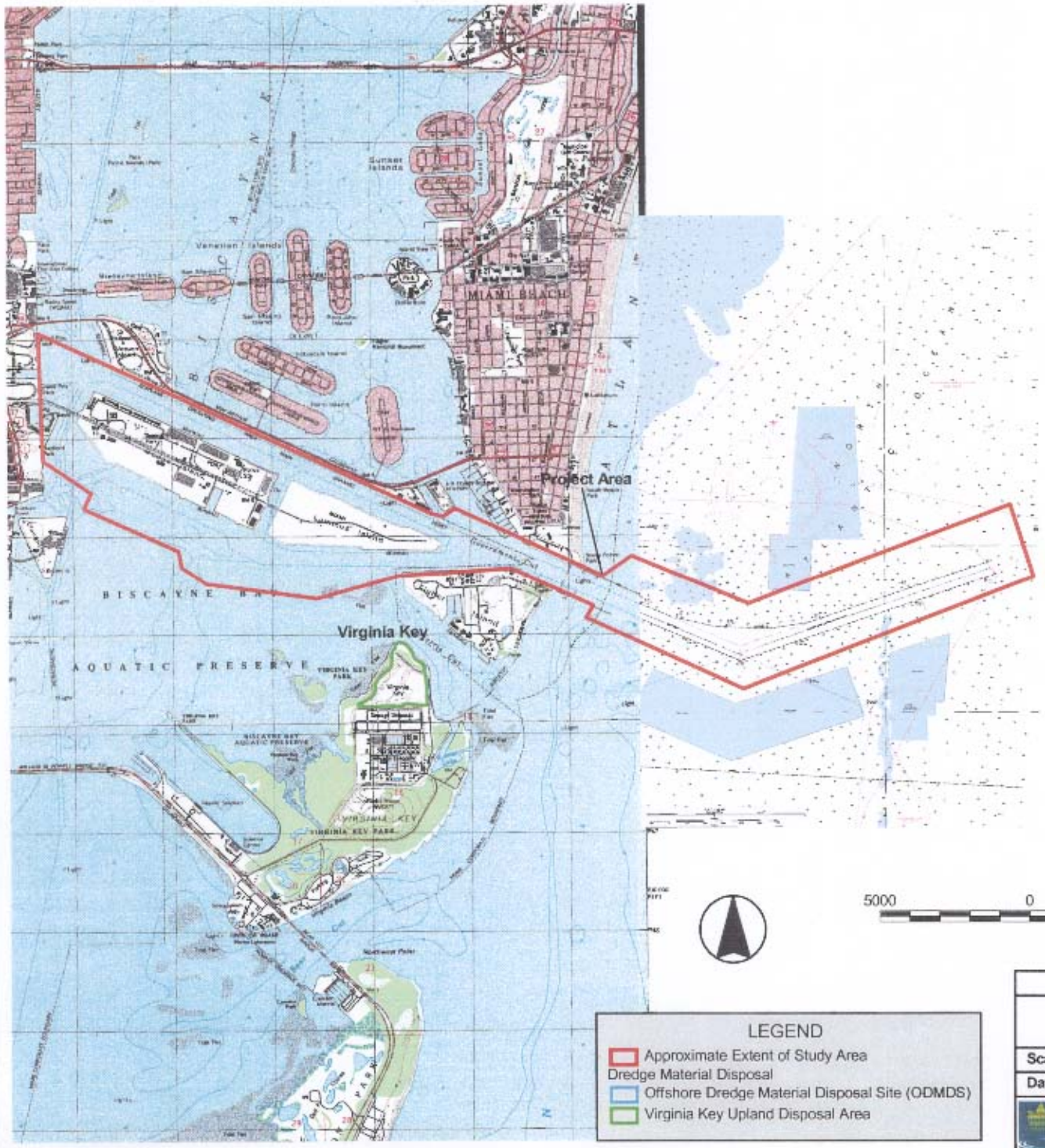

LEGEND
Existing Channel Limits
'89-99' Recorded Manatee Observations
Reported Manatee Deaths (Jan. '74 - Sept. '00)
Watercraft
Other Natural
Undetermined (Verified/Not Recovered)
Undetermined (Decomposed)
Undetermined
Bill Sadowski Critical Wildlife Area
Caretta caretta (loggerhead sea turtle) Strandings '92-'97
Eretmochelys imbricata (hawksbill sea turtle) Strandings '92-'97
Chelonia mydas (green sea turtle) Strandings '92-'97
TURNING BASIN
DODGE ISLAND TURNING BASIN
LUMMUS ISLAND TURNING BASIN
Manatee No Entry Zone
NORRIS CUT
GOVERNMENT CUT
CUT 4
CUT 3
CUT 2
CUT 1
3000 0 3000 6000 Feet
Protected Species
Miami Harbor
Preliminary Draft
Fish & Wildlife Coordination Act Report
Scale: 1" = 3,000'
Drawn By: MR
Date: May, 2002
DIAL, CORDY AND ASSOCIATES INC
J00-498
Figure 4



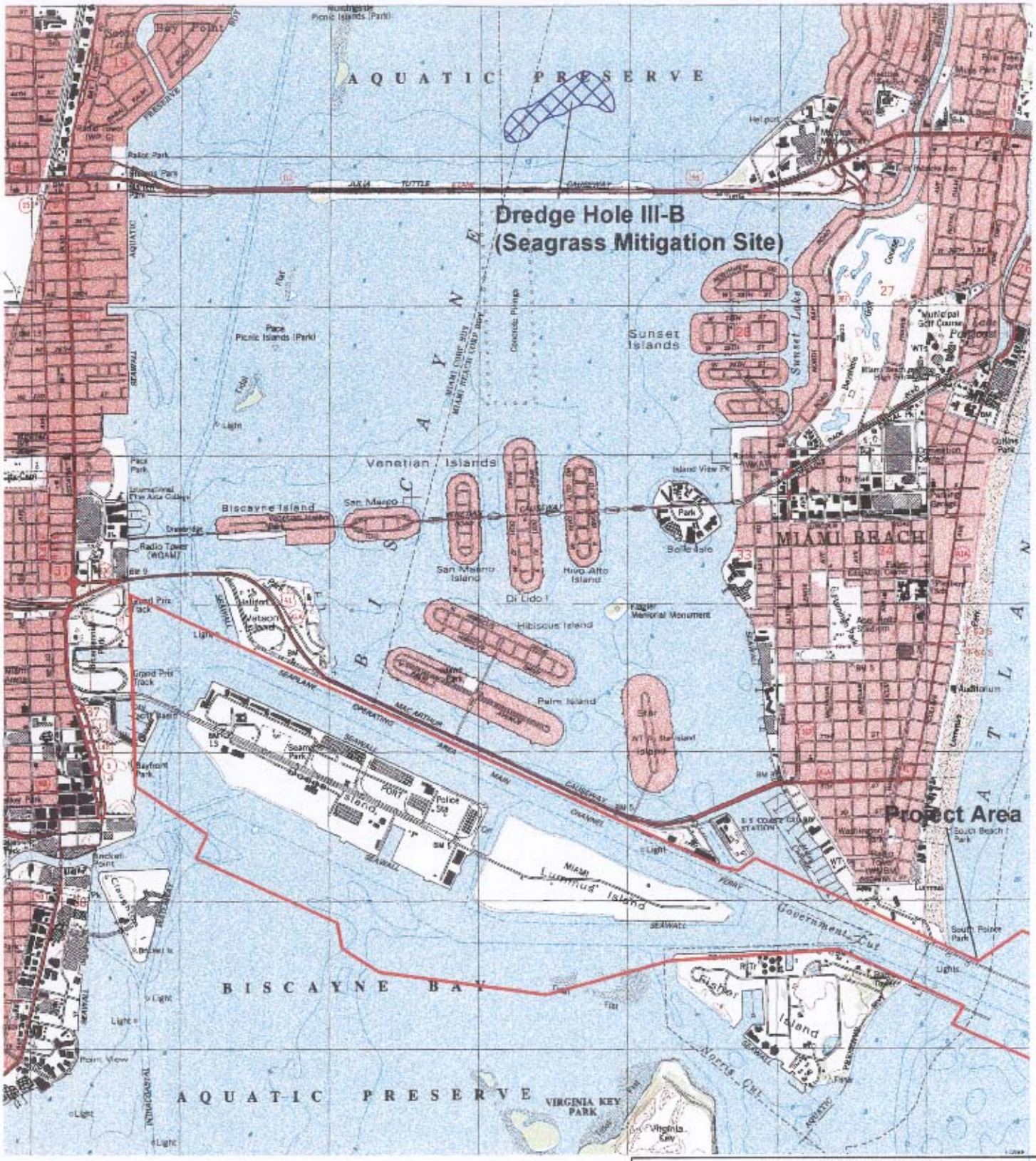
Recommended Plan Impact Area - West Region	
Miami Harbor Preliminary Draft Fish & Wildlife Coordination Act Report	
Scale: 1" = 1,500'	Drawn By: MR
Date: May, 2002	
DIAL, CORDY AND ASSOCIATES INC ENVIRONMENTAL CONSULTANTS	J00-499
	Figure 5



Recommended Plan Impact Area - East Region	
Miami Harbor Preliminary Draft Fish & Wildlife Coordination Act Report	
Scale: 1" = 1,000'	Drawn By: MR
Date: May, 2002	
DIAL, CORDY AND ASSOCIATES INC	J00-499
	Figure 6



Spoil Disposal Site	
Miami Harbor Preliminary Draft Fish & Wildlife Coordination Act Report	
Scale: 1" = 5,000'	Drawn By: MR
Date: May, 2002	
DIAL, CORDY AND ASSOCIATES INC Environmental Consultants	J00-499
	Figure 7

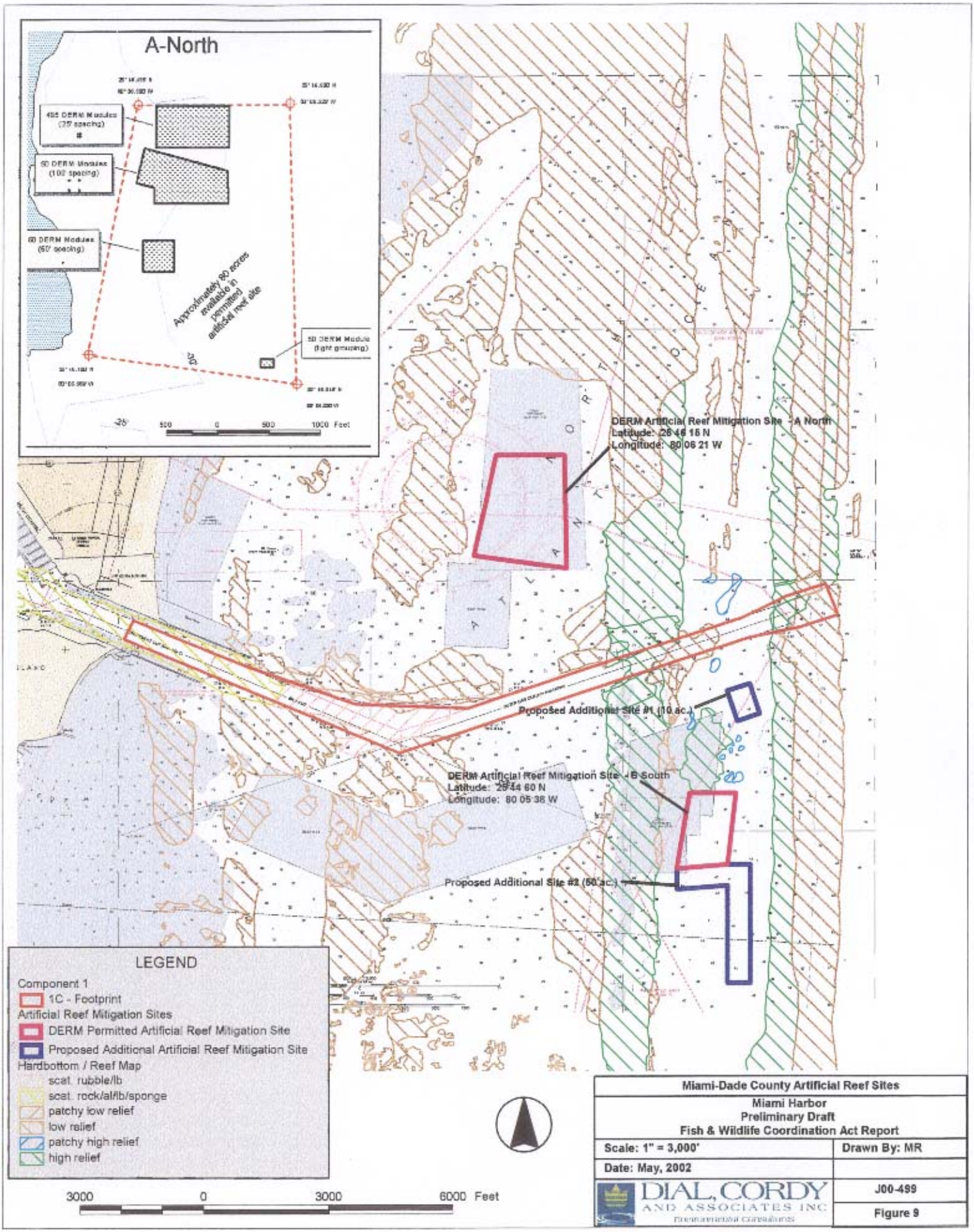


LEGEND

- Approximate Extent of Study Area
- Dredge Hole III-B

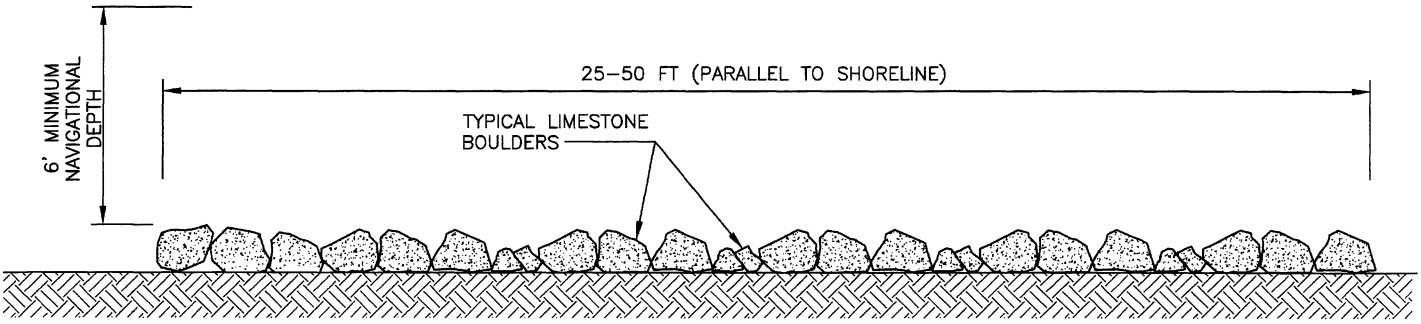
3000 0 3000 6000 Feet

Seagrass Compensation Site	
Miami Harbor Preliminary Draft Fish & Wildlife Coordination Act Report	
Scale: 1" = 3,000'	Drawn By: MR
Date: May, 2002	
DIAL, CORDY AND ASSOCIATES INC Environmental Consultants	J00-499
	Figure 8

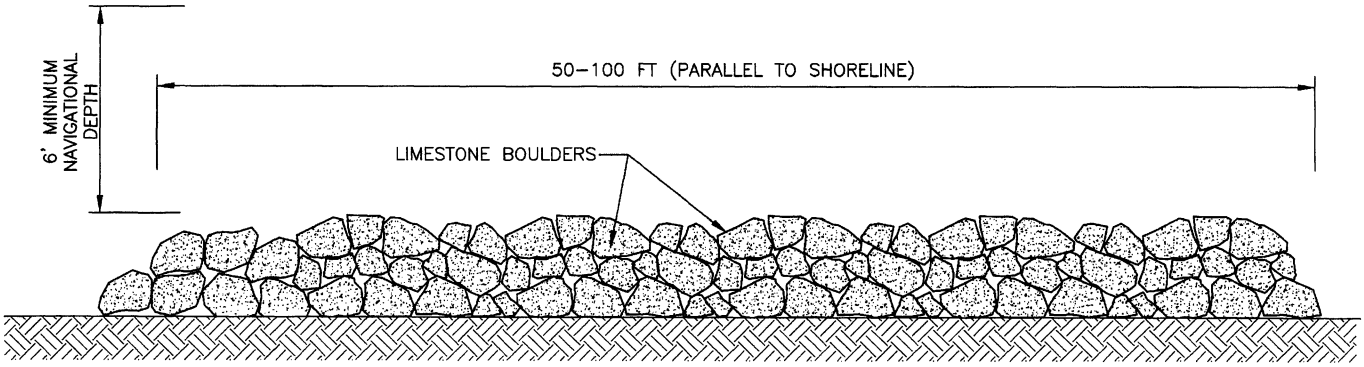


Miami-Dade County Artificial Reef Sites	
Miami Harbor Preliminary Draft Fish & Wildlife Coordination Act Report	
Scale: 1" = 3,000'	Drawn By: MR
Date: May, 2002	
DIAL, CORDY AND ASSOCIATES INC Environmental Consultants	J00-499
	Figure 9

Low-Relief, Low Complexity Artificial Reef Design



High-Relief, High Complexity Artificial Reef Design



Conceptual Design for Artificial Reefs	
Miami Harbor Preliminary Draft Fish & Wildlife Coordination Act Report	
Scale: NTS	Drawn By: MR
Date: May, 2002	
DIAL, CORDY AND ASSOCIATES INC Environmental Consultants	J00-499
	Figure 10

APPENDIX E: Tables

Table 1: Relative Abundance of Fish Species Observed During Visual Survey

Common Name	Scientific Name	South Transects	North Transects
Bar Jack	Caranx ruber	A	--
Beaugregory	Pomacentrus partitus	A	A
Bluehead Wrasse	Thalassoma bifasciatum	A	C
Bluestripe Grunt	Haemulon sciurus	-	C
Cocoa Damselfish	Pomacentrus variabilis	A	A
Foureye Butterflyfish	Chaetodon capistratus	C	C
French Angelfish	Pomacanthus paru	O	O
Gray Snapper	Lutjanus griseus	O	C
Grey Angelfish	Pomacanthus arcuatus	O	-O
Hogfish	Lachnolaimus maximus	O	O
Ocean surgeon	Acanthurus bahianus	-	C
Pearly Razorfish	Hemipteronotus novacula	-	O
Pigfish	Orthoprisits chysoptera	C	C
Porkfish	Anisotremus virginicus	C	C
Princess parrotfish	Scarus guacamaia	O	O
Rainbow parrotfish	Scarus guacamaia	O	O
Redlip Blenny	Opioblennius atlanticus	O	O
Reef Butterflyfish	Chaetodon sedentarius	C	C
Rock Beauty	Holocanthus tricolor	-	C
Seaweed Blenny	Parablennius marmoreus	O	O
Slippery Dick	Halichores bivittatus	C	C
Spanish Hogfish	Bodianus rufus	-	R
Spotted Scorpionfish	Scorpaena plumieri	O	O
Stoplight parrotfish	Sparisoma viride	O	O
Tomtate	Haemulon aurolineatum	C	C
Townsend Angelfish	Holocanthus sp.	R	-
Yellowtail Snapper	Ocyurus chysurus	C	C

KEY: A = abundant, C = common, O = occasional, R = rare

Source: Dial Cordy and Associates, 2001

Table 2: Summary of Sea Turtle Nesting for Miami-Dade County, 1988-2001

Loggerhead (Caretta caretta)[1]

Year	Beach Length (km)	Number of Nests	Number of Non-Nesting Emergences	Date of First Nest	Date of Last Nest
1988	29.9	219	196	05/02/88	08/27/88
1989	29.9	325	407	04/17/89	08/12/89
1990	31.5	390	486	04/07/90	08/22/90
1991	30.7	439	510	04/25/91	08/28/91
1992	38.6	367	416	04/23/92	09/15/92
1993	38.9	392	401	04/28/93	10/03/93
1994	34.7	445	454	04/22/94	08/30/94
1995	37.4	470	595	04/29/95	08/27/95
1996	37.6	448	517	04/26/96	08/20/96
1997	38.1	415	599	04/23/97	08/14/97
1998	38.1	545	937	04/18/98	08/26/98
1999	37.8	516	565	04/10/99	08/18/99
2000	37.8	516	775	04/12/00	09/20/00
2001	37.8	496	564	04/19/01	08/21/01

Green turtles (Chelonia mydas)[2]

Year	Beach Length (km)	Number of Nests	Number of Non-Nesting Emergences	Date of First Nest	Date of Last Nest
1988	29.9	6	2	06/13/88	07/08/88
1989	29.9	2	6	07/01/89	07/07/89
1990	31.5	3	2	05/16/90	07/01/90
1991	30.7	2	2	07/17/91	07/26/91
1992	38.6	4	5	06/27/92	08/03/92
1993	38.9	1	0	06/20/93	06/20/93
1994	34.7	1	1	06/02/94	06/02/94
1995	37.4	2	0	05/21/95	06/27/95
1996	37.6	12	13	06/17/96	08/19/96
1997	38.1	0	2	-	-
1998	38.1	4	10	05/31/98	07/28/98
1999	37.8	64	78	04/23/99	08/18/99
2000	37.8	5	7	06/20/00	07/28/00
2001	37.8	0	0	-	-

Leatherbacks (Dermochelys coriacea)[3]

Year	Beach Length (km)	Number of Nests	Number of Non-Nesting Emergences	Date of First Nest	Date of Last Nest
1988	29.9	5	0	04/25/88	05/14/88
1989	29.9	0	0	-	-
1990	31.5	0	0	-	-
1991	30.7	0	0	-	-
1992	38.6	6	3	04/11/92	05/29/92
1993	38.9	1	0	05/09/93	05/09/93
1994	34.7	0	0	-	-
1995	37.4	2	2	05/15/95	05/25/95
1996	37.6	0	0	-	-
1997	38.1	3	3	04/30/97	05/19/97
1998	38.1	2	1	03/30/98	05/16/98
1999	37.8	9	5	03/29/99	06/09/99
2000	37.8	2	5	03/05/00	03/20/00
2001	37.8	9	7	03/28/01	05/24/01

[1]source: Florida Marine Research Institute. 2002c.
[2]source: Florida Marine Research Institute. 2002a.
[3]source: Florida Marine Research Institute. 2002b.

Table 3 Current Channel and Turning Basin Dimensions

Component 1 – Entrance Channel (Cut-1) & Government Cut (Cut-2)	500 feet wide, 44-foot depth
Component 2 - Cut-3 at Fisherman's Channel	500 feet wide, 42-foot depth
Component 3 – Fisher Island Turning Basin	1200-foot-diameter turning basin, 42-foot depth
Component 4 – Main Channel (Cut-4)	400 feet wide, 36-foot depth
Component 5 – Fisherman's Channel and Lummus Island Turning Basin	400 feet wide, 42-foot depth; turning basin with 42-foot depth and diameter of 1,600 feet
Component 6 – Dodge Island Cut and Turning Basin	400 feet wide with 34 and 32-foot depths (existing turning basin not part of federal project)

Table 4 Components of the Alternatives

Component 1	Flaring the existing 500-foot wide entrance channel to provide an 800-foot wide entrance channel at Buoy 1. The widener extends from the beginning of the entrance channel about 150 feet parallel to both sides of the existing entrance channel for about 900 feet before tapering back to the existing channel edge over a total distance of about 2000 feet. Deepening of the entrance channel and proposed widener along Cut 1 and Cut 2 from an existing depth of 44 feet in one-foot increments to a depth of 52 feet received consideration.
Component 2	Widen the southern intersection of Cut-3 with Lummus Island (Fisherman's) Channel at Buoy 15. The length of the widener is about 700 feet with a maximum width of about 75 feet. Depths considered for 2A varied from an existing project depth of 42 feet to 50 feet.
Component 3	Extend the existing Fisher Island turning basin to the north. A turning notch of about 1500 feet by 1200 feet extends approximately 300 feet to the north of the existing channel edge near the West End of Cut-3. Depths from 43 to 50 feet at one-foot increments below the existing depth of 42 feet received consideration in the area of the turning notch.
Component 4	Relocate the west end of the main channel (cruise ship channel or Cut-4) about 250 feet to the south between channel miles 2 and 3 to the existing cruise ship turning basin. No dredging is expected for measure four since existing depths allow for continuation of the authorized depth of 36 feet.
Component 5	Increase the width of the Lummus Island Cut (Fisherman's Channel) about 100 feet to the south of the existing channel. Measure 5 includes a 1500-foot diameter turning basin, which would reduce the existing size of the Lummus Island (or Middle) turning basin. The deepening evaluation examined depths below the existing 42-foot depth at one-foot increments from 43 to 50 feet along the proposed widened channel from Cut-3, Station 0+00 to Cut-3, Station 42+00.
Component 6	Deepen Dodge Island Cut and the proposed 1200-foot turning basin from 32 and 34 feet to 36 feet. It also involves relocating the western end of the Dodge Island Cut to accommodate proposed port expansion.

Components of the Recommended Plan are listed in boldface.

Table 5: Impact Acreages by Habitat Type and Current Dredge Status

Habitat Type and Current Dredge Status	Component no.					
	1	2	3	4	5	Total
Seagrass- new impacts to areas not previously dredged and that exist *outside proposed channel boundaries* (ac)	00.0	00.0	00.1	00.0	**6.00**	**6.1**
Seagrass- new impacts, not previously dredged, inside proposed channel boundaries (ac)	00.0	00.0	00.0	00.0	**0.2**	**0.2**
Seagrass- previously dredged and recolonized, inside proposed channel boundaries (ac)	00.0	00.0	00.0	00.0	00.0	00.0
Low-relief hardbottom- new impacts, not previously dredged (ac)	**00.6**	00.0	00.0	00.0	00.0	**00.6**
Low-relief hardbottom, previously dredged and recolonized (ac)	**28.1**	**0.26**	00.0	00.0	**2.41**	**30.7**
High-relief hardbottom- new impacts, not previously dredged (ac)	**02.7**	00.0	00.0	00.0	00.0	**02.7**
High-relief hardbottom, previously dredged and recolonized (ac)	**18.0**	00.0	00.0	00.0	00.0	**18.0**
Rock/rubble w/ livebottom- new impacts, not previously dredged (ac)	00.0	00.0	00.0	00.0	00.0	00.0
Rock/rubble w/ livebottom, previously dredged and recolonized (ac)	**51.7**	00.0	00.0	00.0	00.0	**51.7**
Rock/rubble w/ algae/sponges- new impacts, not previously dredged (ac)	00.0	**00.6**	**00.9**	00.0	**01.5**	**3.0**
Rock/rubble w/ algae/sponges, previously dredged and recolonized (ac)	**41.3**	00.0	**25.2**	00.0	**02.3**	**68.8**
Unvegetated (i.e., softbottom habitats without seagrasses)- new impacts, not previously dredged (ac)[1]	**01.3**	00.0	**05.3**	00.0	**16.7**	**23.3**
Unvegetated (i.e., softbottom habitats without seagrasses), previously dredged (ac)	**66.9**	00.0	**19.1**	00.0	**127.1**	**213.1**
Total Impacts, including impacts to seagrass beds that exist outside proposed channel boundaries (ac)	**210.6**	**0.86**	**50.6**	**00.0**	**156.2**	**446.4**

[1]not including secondary impacts acting over time, such as side-slope erosion

Table 6 Essential Fish Habitats Associated with Recommended Plan

Plan Component	Essential Fish Habitats Impacted
1	Water Column, Hardbottom, Reefs, possible *Laurencia* beds
2	Water Column, possible *Laurencia* beds
3	Water Column, Inshore Softbottom
4	None
5	Water Column, Inshore Softbottom, Seagrass Beds